



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/635,245	08/05/2003	Yi-Shiung Lee	59693 (71987)	9440
7590	07/13/2005		EXAMINER	
Mr. Steven M. Jensen EDWARDS & ANGELL, LLP 101 Federal Street Boston, MA 02110			GEBREMARIAM, SAMUEL A	
			ART UNIT	PAPER NUMBER
			2811	

DATE MAILED: 07/13/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

H'A

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/635,245	LEE ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Samuel A. Gebremariam	2811	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 22 April 2005.
- 2a) This action is FINAL.                            2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-20 is/are pending in the application.
  - 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1-20 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.
 

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
    - a) All    b) Some \* c) None of:
      1. Certified copies of the priority documents have been received.
      2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
      3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) Notice of Informal Patent Application (PTO-152)
- 6) Other: \_\_\_\_\_

**DETAILED ACTION*****Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

2. Claims 1-8, 10-18 and 20 are rejected under 35 U.S.C. 102(e) as being anticipated by Han et al., US patent application No. 2004/0061205.

Regarding claims 1 and 11, Han teaches (fig. 3) a lead frame (300) having at least one die pad (106), a plurality of tie bars (308) connected with and supporting the die pad (refer to fig. 3), a plurality of leads (102) surrounding the die pad, and a ground structure (306); wherein the ground structure comprises at least one of first ground portions connected to the tie bars (refer to fig. 3), and wherein the first ground portions are separate from each other (refer to fig. 3), and a hollow-out area (314) between the first ground portion and one of the tie bars (308); at least one chip (108, paragraph 0043) mounted on the die pad and electrically connected to the leads and the first ground portion of the ground structure by bonding wires (200, signal wires, refer to fig. 4); and an encapsulation body (204, refer to fig. 4) for encapsulating the chip and the lead frame (300).

The recitation ground-enhanced semiconductor package, has not been given patentable weight because the recitation occurs in the preamble. A preamble is

generally not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone. See *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951).

Regarding claims 2 and 12, Han teaches (fig. 3) the entire claimed structure of claim 1 above including at least one of second ground portions (302) connected to the die pad (paragraph 0043 last line), wherein the second ground portions are separate from each other and from the first ground portions (refer to fig. 3).

Regarding claims 3 and 13, Han teaches (fig. 3) the entire claimed structure of claim 1 above including the first ground portion (306 is connected to 106 via 308) is connected to the die pad (106).

Regarding claims 4 and 14, Han teaches (fig. 3) the entire claimed structure of claim 1 above including the first ground portion comprises a ground area and a connection area (region where 306 is connected to 308) which are interconnected to form a hollow-out area (314) together with one of the tie bars (308).

Regarding claims 5 and 15, Han teaches (fig. 3) the entire claimed structure of claim 1 above including the first ground portion is not connected to the die pad (refer to fig. 3).

Regarding claims 6 and 16, Han teaches (fig. 3) the entire claimed structure of claim 1 above including the first ground portion is shaped as a strip.

Regarding claims 7 and 17, Han teaches (fig. 3) the entire claimed structure of claim 2 above including the second ground portion (302) comprise a ground area and at least one connection area which are interconnected to form a hollow-out area together with a side edge of the die pad (empty space between 106 and 302).

Regarding claims 8 and 18, Han teaches (fig. 3) the entire claimed structure of claim 1 above including each of the tie bars (308) is formed with at least one of the first ground portions (306).

Regarding claims 10 and 20, Han teaches (fig. 3) the entire claimed structure of claims 1 and 12 above including each side edge of the die pad (106) is formed with at least one of the second ground portions (302).

#### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 9 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Han in view of Karnezos et al. US Patent No. 6,326,678.

Regarding claims 9 and 19, Han teaches the entire claimed structure of claim 1 above except explicitly stating that the first ground portions are connected to both lateral sides of the tie bars.

Karnezos teaches (fig.4) attaching ground structures (208a-208d) to both lateral sides of the tie bar structures (241a-241d) in the formation of molded package structure.

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the tie bar/ground structure arrangement taught by Karnezos in the device of Han in order to improve the thermal dissipation performance.

### ***Response to Arguments***

5. Applicant's arguments with respect to claims 1-20 have been considered but they are not persuasive.

Applicant argues that Han does not or suggest a hollow-out area formed between the first ground portion and one of the tie bars as recited in claims 1 and 11. Clearly shown in fig. 3, Han teaches a hollow-out area (slot, open space 314). Hollow-out area is taken to mean an open space, therefore the structure (314) reads on the same claimed limitation. Furthermore (306) is considered a ground structure and as shown in fig. 3 at least one chip (108, paragraph 0043) mounted on the die pad and electrically connected to the leads and the first ground portion of the ground structure by bonding wires (200, signal wires, refer to fig. 4).

### ***Conclusion***

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Samuel A. Gebremariam whose telephone number is (571)-272-1653. The examiner can normally be reached on 8:00am-4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie Lee can be reached on (571) 272-1732. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

SAG  
July 10, 2005

Steven Lohé  
Primary Examiner

